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ABSTRACT

Adolescent substance abuse is determined by a complex of factors, and influences on it may vary as a function of developmental level. According to the social development model (Hawkins et al., 1986), family influences on substance abuse may be strongest in preschool and early school-age children; family and school influences may be equal during early and mid-school years, and peer influences dominate during adolescence. 4,160 6th through 12th grade students from rural Alabama school districts were studied to assess the relationship between a variety of risk factors and adolescent substance use. Questions on a self-report instrument asked about use of 14 substances, including alcohol, tobacco, and a variety of illicit drugs. Questions addressed separate risk factors subsumed under four domains: (1) family; (2) school; (3) community; and (4) individual and peer influences. Results were generally consistent with other reports of adolescent substance use. Alcohol, tobacco products, and marijuana were the most frequently reported substances used, cigarettes and beer being the most commonly used products. The individual domain produced the strongest correlations with alcohol, tobacco, and illicit drug use, suggesting that factors such as associating with friends who use drugs were most highly related to substance use, followed by school, community, and family risk factors. (MSF)

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RISK FACTORS ASSOCIATED WITH SUBSTANCE USE IN ADOLESCENTS

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Recent reviews of research on substance abuse lead to two important conclusions. First, adolescent substance abuse is a behavior determined by a complex of factors, including family, peer, school, and local and societal influences (Brook, Nomure, & Cohen, 1989; Hawkins, Lishner, Catalano, & Howard, 1986; Hawkins, Catalano, & Miller, 1992; Richardson et al., 1989; U.S. D.O.E., 1987). The U. S. Department of Education (1987) has determined that adequate understanding and prevention of adolescent substance abuse may require multiple foci of assessment and intervention. Second, influences on adolescent substance abuse may vary as a function of developmental level (Hawkins et al., 1986; Shedler & Block, 1990). Hawkins et al. (1986) have formulated the social development model, which posits risk factors on a developmental continuum. According to the social development model, family influences on substance abuse may be most salient in preschool and early-school-age children, family influences and school influences may be equipotential during early- and mid-school years, and peer influences on substance abuse are dominant during adolescence.

In this paper we present some findings from an adolescent substance abuse research program designed specifically to assess the relationship between a wide variety of risk factors and adolescent substance use. The risk factors were identified based on the work of Hawkins and his associates (Hawkins et al., 1986; Haggerty, Wells, Jenson, Catalano, & Hawkins, 1989) (Figures 1 & 2). The model integrates three theoretical perspectives along three axes. Risk and protective factors form one axis, with levels of prevention and developmental stage forming the other two axes (Figure 1).

Method

Participants for this study were 6th through 12th grade students from rural Alabama school districts, who were included by the following process. Information about the instrument had been disseminated through several workshops and seminars to school personnel across the state. Drug education coordinators from several school districts contacted one of the authors requesting that the instrument be administered in their schools. Participants were all students in a grade level, in all grade levels or a subset of the grade levels from each district (determined by the school/district official requesting the administration).

Questions for a self-report instrument were written to address separate risk factors subsumed under four domains: Family (family management practices and parental use and attitude towards use), School (early antisocial behavior, commitment to school, and academic failure), Community (economic and social deprivation, norms toward drug use,

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transiency, availability of drugs, and low neighborhood attachment), and Individual/Peer (friends who use, early first use, alienation, favorable attitudes toward use, and antisocial behavior in early adolescence).

Family: Items in this domain assess family management practices in the students' homes. We were interested in consistency of rule setting and enforcement in homes, whether families enjoyed doing activities together, the degree to which families had clear standards for behaviors, and parental modeling and attitudes toward use.

Community: Items in this domain measure the stability of neighborhoods and the feelings that youth have about their communities. For example, we assessed how often people in the community socialized together, how available drugs and alcohol were to them, and the degree of participation in community activities.

School: Items in this domain assessed the degree of involvement in school, school success, and values held about education. We anticipated that youth less involved in school and with less commitment to and success in education would engage in substance abuse at a greater rate.

Individual/Peer: Items in this domain assessed individual characteristics as well as peer influences and associations. For example, we were interested in seeing whether youth whose friends were substance users used more substances than youth who had friends that did not use.

The literature suggests that personality may not play as important role in substance use as once thought (Hawkins et al., 1986). Yet we did include the personality trait sensation-seeking, which has received considerable attention as a correlate of risk-taking in a number of areas, including substance abuse (Zuckerman, 1979).

Substance Use: Self report of substance use included questions on recent (last 3 months) use of fourteen substances, including alcohol, tobacco, and a variety of illicit drugs.

Results

The present results are based on administration of the instrument to 4,850 students. We attempted to correct for some problems inherent in self report by instituting validity checks. We checked for consistency by comparing the responses for selected items on the questionnaire. Students who reported that they never used substances on the question dealing with "age at first use" and also reported use on any one of the 14 substances were considered unreliable and were eliminated from the data pool. Additionally, students who did not answer 20 or more items on the general questionnaire or who did not respond to all substances on the use item were eliminated. These procedures resulted in reducing the sample size by about 15% to a final sample size of 4,160.

Frequency of Substance Use: Our results were generally consistent with other reports of substance use by adolescents. Alcohol, tobacco products, and marijuana were the most frequently report substances used by our sample. Within the top three substances, cigarettes and beer were clearly the most commonly used products. Rates of smoking increased from 12.1% for sixth graders to 30.9% for twelfth graders. This

trend was also noted for beer with a 38.2% increase in use from sixth to twelfth graders (see Figure 3). Rates for marijuana were relatively low compared to beer and cigarettes. Nearly 95% of the sample reported never using marijuana, but as with the other substances, use increased with grade level. Marijuana use at the twelfth grade level was 8.9%, but most of these were experimenters having tried it once or twice with less than 1% reporting daily use. Rates of use for cocaine and all other illicit substances were extremely low compared to alcohol and tobacco products.

Confirmatory Factor Analysis: Bentler's EQS (1992) program was used to perform confirmatory factor analysis. The four risk factor domains were entered as independent factors, and three dependent factors were defined: Alcohol Products (Beer, Hard Liquor, Wine, Wine Coolers); Tobacco Products (Cigarettes, Smokeless Tobacco); Illicit Substances (All other substances).

The initial confirmatory factor analysis yielded poor fit indices. The chi-square value was 163,717 (7,875 df) and the Bentler-Bonett normed and non-normed fit indices were .490 and .493. Through adding correlated residuals to the hypothesized model, a better fit was achieved, decreasing the chi-square value to 73,686 (7,541 df) and increasing the Bentler-Bonett normed and non-normed fit indices to .771 and .780 for the respecified confirmatory factor analysis. These fit indices are still lower than would be required to conclude that the specified model is an acceptable one to describe these data. Further analyses will be conducted to determine problems in our measurement model, i.e., the way the factors are defined by particular questions in our instrument. Figures 4-7 show factor intercorrelations. Figure 4 depicts the full CFA model with intercorrelations among independent and dependent factors, and Figures 5-7 show intercorrelations between the four independent risk factors and each of the three dependent factors.

The four risk factor domains, Family, School, Individual, and Community correlated with substance use in varying degrees. The Individual domain produced the strongest correlations with alcohol (.761), tobacco (.905), and illicit drug use (.350). These correlations suggest that individual factors, such as associating with friends who use drugs, were most highly related to substance use. For example, one item from the Individual domain, "Age of First Use", showed a very strong individual correlation with alcohol use (.70), tobacco use (.62), and illicit drug use (.53). The School factor showed next strongest correlations with alcohol (.411), tobacco (.535), and illicit drug use (.230). The Community factor was next most strongly related to alcohol (.334), tobacco (.347), and illicit drug use (.160). The Family factor was least strongly related to alcohol (.231), tobacco (.264), and illicit drug use (.097).

Discussion

The data from this study provided some evidence that risk factors cited in the literature are related to adolescent substance use. Preliminary results indicated that of those factors identified, individual characteristics may play the most important role, followed by school, community, and family factors. We will seek to refine further how we measure the factors and search for structural models that show the relationships among the factors.

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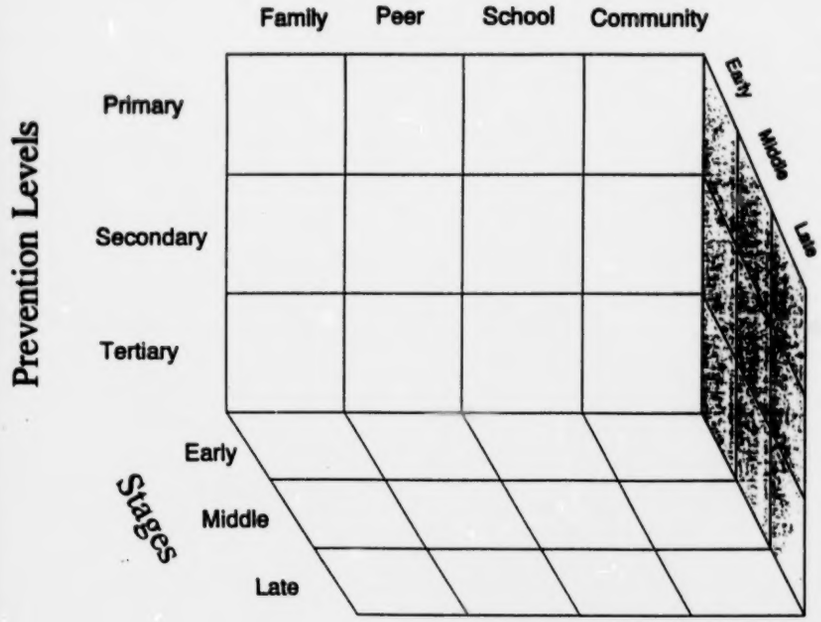
Figure 1

Model for Drug Prevention*

Risk / Protective Factors



*Model adapted from School Wide Intervention and Prevention Education Grant from the Drug Free Schools and Communities Grant Program, U.S. Department of Education.

Figure 2

THE SOCIAL DEVELOPMENT MODEL RISK FACTORS, BY DOMAIN

Community Risk Factors

- Economic and social deprivation
- Low neighborhood attachment and community disorganization
- Transitions and mobility
- Community laws and norms favorable toward drug use
- Availability of drugs

Family Risk Factors

- Family history of alcoholism
- Family management problems
- Parental drug use and positive attitudes towards drug use

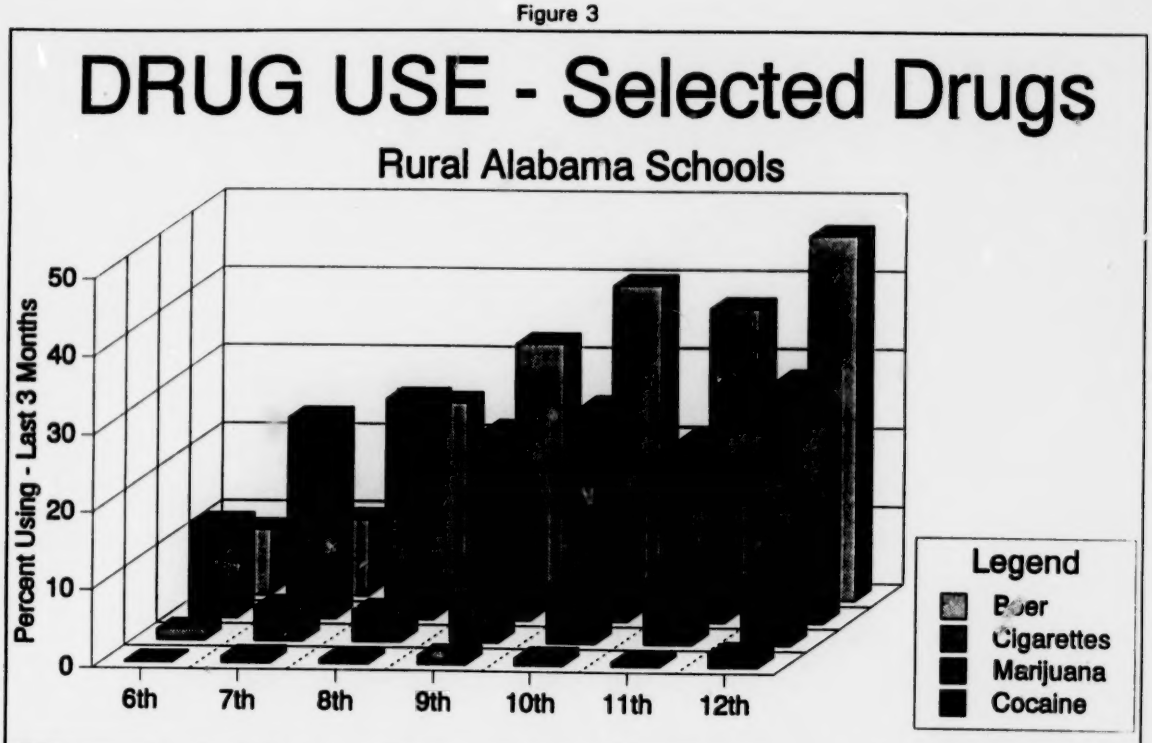
School Risk Factors

- Early antisocial behavior
- Academic failure
- Low commitment to school

Individual / Peer Risk Factors

- Alienation or rebelliousness
- Antisocial behavior in early adolescence
- Friends who use drugs
- Favorable attitudes towards drug use
- Early first use of drugs

Figure 3



Beer	8.4	9.8	24.9	32.5	40.1	37.2	46.6
Cigarettes	12.1	25.8	28.3	24.4	27.5	23.3	30.9
Marijuana	1.4	4.4	4	8.4	7.8	8.4	8.9
Cocaine	0.2	0.9	0.6	1.2	1	0.6	1.9

Figure 4

FULL CONFIRMATORY FACTOR ANALYSIS

WITH INDEPENDENT AND DEPENDENT FACTOR INTERCORRELATIONS

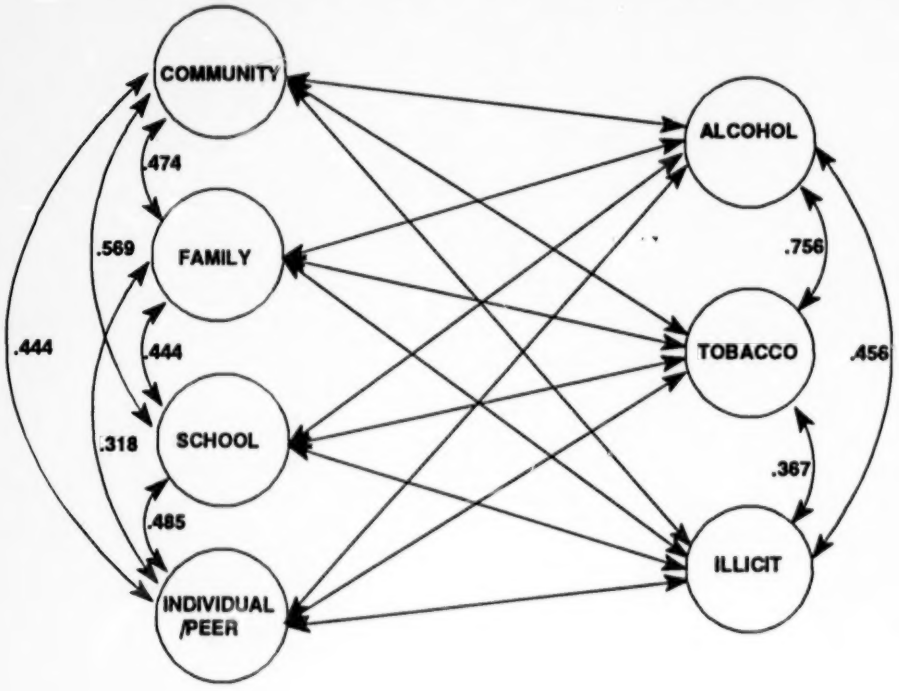


Figure 5

INDEPENDENT FACTOR CORRELATIONS

WITH ALCOHOL DEPENDENT FACTOR

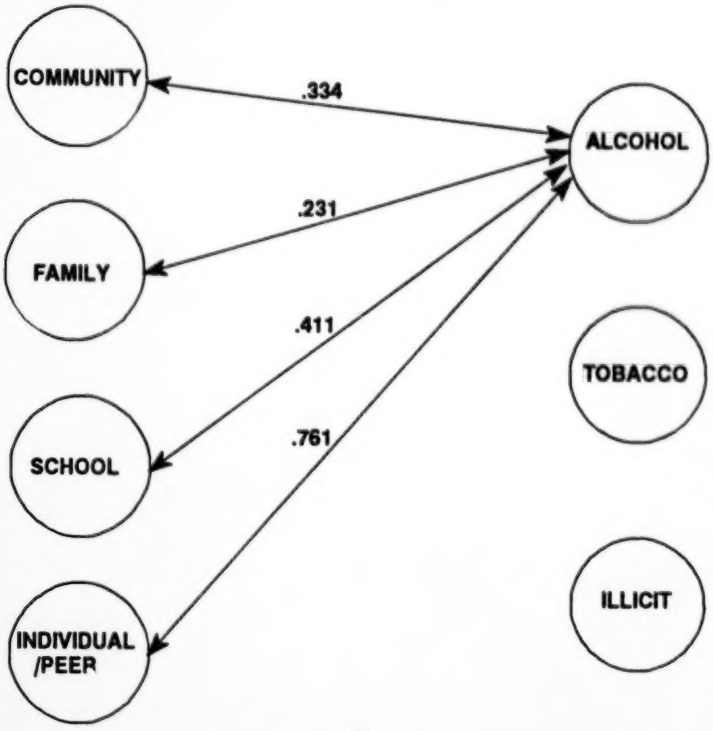


Figure 6

INDEPENDENT FACTOR CORRELATIONS
WITH TOBACCO DEPENDENT FACTOR

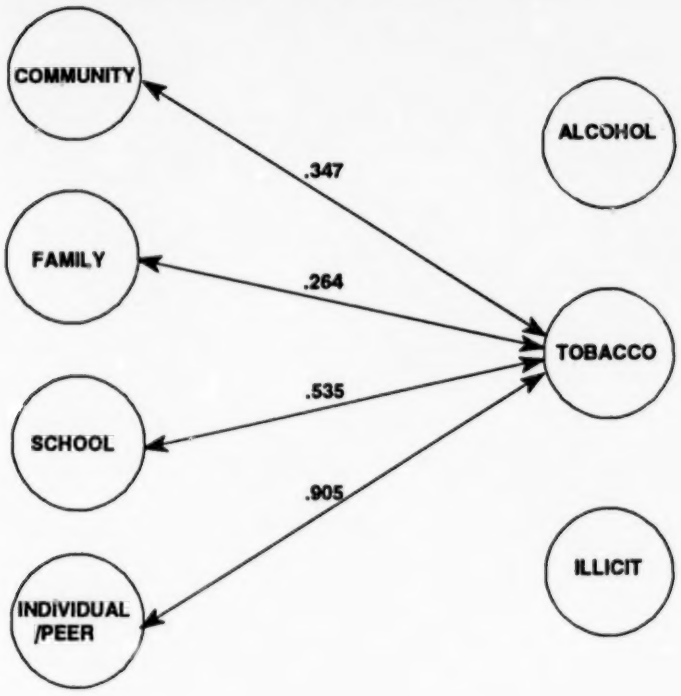


Figure 7

INDEPENDENT FACTOR CORRELATIONS
WITH ILLICIT DEPENDENT FACTOR